

Bureau of Land Management
Buffalo Field Office Impoundment Reclamation Guidance
12-27-12

I. Introduction:

- A. **Authority:** The Secretary of the Interior has delegated this authority to the Bureau of Land Management (BLM), which has issued onshore oil and gas operating regulations codified at part 3160 of Title 43 of the Code of Federal Regulations. The operating regulations at 43 CFR 3164 for Onshore Oil and Gas Regulations and subsequent Oil and Gas Orders are binding on the operator(s) of Federal and Indian onshore oil and gas leases (other than those of the Osage Tribe).

The Secretary of Agriculture has authority under the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (P.L. 100–203) (Reform Act) to regulate surface disturbing activities conducted pursuant to a Federal oil and gas lease on National Forest Service (NFS) lands. This authority has been delegated to the Forest Service (FS). The FS is responsible only for approving and regulating surface disturbing activities on NFS lands and appeals related to FS decisions or approvals.

Authority specific to this guidance includes, but is not limited to:

- 43 CFR 3160 Onshore Oil and Gas Operations: General
 - Onshore Oil and Gas Operations; Federal and Indian Oil and Gas Leases; Onshore Oil and Gas Order Number 1, Approval of Operations Final Rule (March 7, 2007).
 - Onshore Oil and Gas Operations; Federal and Indian Oil and Gas Leases; Onshore Oil and Gas Order Number 7, Disposal of Produced Water
 - Record of Decision and Resource Management Plan Amendments for the Powder River Basin Oil and Gas Project (WY-070-02-065 April 2003)
 - Resource Management Plan/Final Environmental Impact Statement for Buffalo Resource Area as approved October, 2005
- B. **Purpose:** This guidance is specifically designed for the reclamation of impoundments (on or off channel) used for the containment of water produced in association with Coal Bed Natural Gas (CBNG). The Powder River Basin Final Environmental Impact Statement (PRB FEIS) identified some of the potential impacts to soils exposed to water discharge or storage based on soil/water interaction (PRB FEIS pg 4-144 through 152). Programmatic mitigation addressing the need for testing of sediments prior to reclamation has been attached to most project approvals that include impoundments since April, 2003.

The primary goal for impoundment site reclamation is to facilitate the establishment of a native plant community with a reconstructed ecosystem that maintains a safe and stable landscape.. The land must be returned to stable and functioning condition that meets resource objectives of the land use plan, while insuring that potentially impacted soils do not pose a threat to human health or the environment. Additional guidance for reclamation may be found in the Wyoming Reclamation Policy (IM WY 2012-032) which can be accessed at: <http://www.blm.gov/style/medialib/blm/wy/resources/efoia/IMs/2012.Par.83277.File.dat/wy2012-032atch1.pdf> and the Reclamation Plan Template found at:

<http://www.blm.gov/style/medialib/blm/wy/resources/efoia/IMs/2012.Par.57157.File.dat/wy2012-032atch2.pdf> .

The guidance presented here is subject to change if new data or information creates the need for modifications.

Scope: The purpose of this document is to provide operators with guidance for the reclamation of existing on-channel reservoirs, off-channel pits and associated facilities affiliated with Federal fluid mineral gas production. Those impoundments under the authority of a State agency will be regulated by the requirements of the pertinent agency (See WDEQ Bonding requirements at http://deq.state.wy.us/wqd/WYPDES_Permitting/WYPDES_cbm/cbm.asp). The operator should submit plans to the Buffalo Field Office for approval in three phases to insure that successful reclamation is achieved. The BLM will review and evaluate each Sundry Notice and accompanying information. Additional information may be required by the BLM Authorized Officer if deemed necessary to evaluate the proposal. Coordination with the BLM prior to submittal may facilitate the concurrent submittal of Phase I and Phase II where applicable. Site-specific COAs may be applied by the BLM authorized officer (AO) as needed. This guidance will be adapted as necessary to reflect conditions identified in the field.

In certain cases following completion of CBNG production activities, surface owners may wish to keep impoundments in which CBNG-produced water has been discharged and stored. In such cases, the operator must perform the sampling described in Items Nos. 5 through 8 of Phase I - Notice of Intent to Abandon Impoundment below and provide this information to the surface owner. Section III(A)(5) - (8). Additionally, the operator must fully inform the surface owner of the hydrologic, geotechnical, regulatory, and liability risks associated with the discharge or storage of CBNG water. After informing the surface owner, the operator must obtain the surface owner's knowing and willing agreement to keep the impoundments, including the surface owner's assumption of all liability, and concurrent release of the United States from any and all liability, associated with the impoundments and the discharge and storage of CBNG produced water.

The operator must submit to BLM (1) the information required under Items Nos. 5 through 8 of Phase I - Notice of Intent to Abandon Impoundment below and completed BLM Buffalo Field Office-approved Forms entitled (2) *Operator Certification* and (3) *Surface Owner Agreement and Liability Release*. In addition, the operator must provide documentation from the Wyoming State Engineers Office (WSEO) that the impoundment permit may be assumed by the landowner, as per the WSEO CBNG Reservoir Closeout Policy, dated 06-11-12. BLM will determine whether to waive the reclamation and bonding requirements for the listed impoundments based on this information and such other information as BLM determines is necessary. If BLM waives the reclamation and bonding requirements, the remainder of this guidance will not apply. Please contact Buffalo Field Office Natural Resource Specialists at (307) 684-1100 with any questions.

II. Definitions:

- A. **Authorized Officer** means any employee of the Bureau of Land Management authorized to perform duties described in 43 CFR Groups 3000 and 3100.

- B. **Bond** is a monetary surety in the amount estimated to cover the estimated reclamation of the structure which is held by the BLM to insure acceptable reclamation.
- C. **Condition of Approval** means a site-specific requirement included in an approved APD or Sundry Notice that may limit or amend the specific actions proposed by the operator. Conditions of Approval minimize, mitigate or prevent impacts to public lands or other resources. Best Management Practices may be incorporated as Conditions of Approval.
- D. **Impoundment** is a body of water confined within an enclosure, such as a reservoir.
1. **On-channel** means the impoundment is located in a naturally formed path of water flow. Channels can be ephemeral (flowing only in response to a precipitation event or snow melt), intermittent (flowing only at certain times of the year when it receives water from alluvial groundwater, springs, or other surface source) to perennial (continuous flow).
 2. **Off-channel** means that the impoundment or pit is located in a place with no or little potential for surface run off to drain into the structure. Wyoming Department of Environmental Quality (WDEQ) states that off-channel impoundments have less than 40 acres of contributing area above (up-stream) of the structure.
- E. **Outfall or water discharge point** is the location, permitted through the WDEQ, where produced water can be released to the surface.
- F. **Operator** means any person or entity, including but not limited to the lessee or operating rights owner, who has stated in writing to the authorized officer that it is responsible under the terms and conditions of the lease for the operations conducted on the leased lands or a portion thereof (see 43CFR 3610.0-5).
- G. **Produced Water** means water produced in association with coal bed natural gas.
- H. **WYPDES** is the Wyoming Pollutant Discharge Elimination System.

III. Requirements

A. Phase I – Notice of Intent to Abandon Impoundment

Submit 3 copies of BLM Form 3160-5 (Sundry Notice) as a Notice of Intent to Abandon with the following background information:

1. Names, addresses, and phone numbers of the operator, and operator's primary contact person responsible for impoundment closure, POD name (if applicable), lease number, reclamation bond number, and WYPDES permit number.
2. Names, addresses and phone numbers of the landowner.
3. Soil Survey Map Unit Symbol for location and land use.
4. Depth to groundwater and groundwater quality (if available).

5. Copies of the sediment analysis data package which includes QA/QC and chain of custody documentation. Sediment/soils in the pool area of the impoundment must be sampled and analyzed as listed in the following table.

Parameter	Method	MDL (mg/kg)
Texture (sand, silt, clay)	ASTM D422	NA
pH	USDA Hbk. 60, method 2/21a	0.1
Conductivity	ASA Mono #9, 10-3.3	0.01 mmhos/cm
Soluble Ca, K, Mg, and Na	ASA 9-3.1.2.3 / EPA 200.7	0.1 meq/100g
SAR	USDA 60, Method 20B	0.01
Arsenic	ASA 9-3-5-2.3 (AB-DTPA)	0.1
Arsenic	ICP-MS - EPA M200.8/6020	0.05
Barium	ICP-MS - EPA 200.7/6010	
Boron	ASA 9-2-25-9.1 (Hot Water)	0.1
Boron, total	ICP-MS - EPA M200.8/6020	0.05
Cadmium	ICP-MS - EPA 200.7/6010	
Copper	ICP-MS - EPA M200.8/6020	0.25
Iron	ICP-MS - EPA 200.7/6010	
Manganese	ICP-MS - EPA M200.8/6020	0.25
Molybdenum	ASA 9-3-5-2.3 (AB-DTPA)	0.1
Molybdenum, total	ICP-MS - EPA M200.8/6020	0.25
Radium 226	EPA 903.0	1 pCi/g
Selenium	ASA 9-2-3-5.2.3 (Hot water)	0.02
Selenium, total	ICP-MS - EPA M200.8/6020	0.05
Zinc	ICP-MS - EPA M200.8/6020	1
Total Organic Carbon	ASA Mono #9	0.10%

Samples will be collected at a minimum of five (5) locations per surface acre of pool area from depths of 0 to 6 inches, 6 to 24 inches, and 24 to 48 inches and composited for each depth interval for a total of three (3) representative samples per acre.

6. If a baseline or background sample was not collected prior to development, an additional soil sample will be collected from a representative upstream channel location that has not been affected by CBNG discharge,. Individual samples will be taken at depths of 0 to 6 inches, 6 to 24 inches, and 24 to 48 inches. This sample will not be composited with the impoundment samples. The purpose of this sample is to help define the reclamation goal.
7. Areas down gradient of the structure that may have been impacted by the impoundment, such as seeps, will be sampled using the same criteria as the baseline sampled and the analytical results submitted.
8. Based on the results of the sediment analyses, estimate the quantity of potentially impacted sediment/soil material.
9. Copy of the Wyoming State Engineer's Office permit including any amendments.

10. A 7.5 minute USGS topographic map showing the impoundment site(s) and associated infrastructure, surface water features, water wells, springs, residences and other sensitive area features within one mile of the impoundment.
11. Site photographs of the embankment, reservoir pool area, emergency spillway, associated structures, the channel immediately upstream and downstream of the site, any headcuts within 300 feet downstream of the embankment, and any other down gradient channel reaches impacted by reservoir seepage.
12. Size (height and width) and distance to (from the toe of the embankment) of all channel headcuts within 300 feet downstream of the toe of embankment.
13. Drainage area upstream of the embankment and the calculated peak runoff from the 2-year, 24-hour and the 100-year, 24-hour storm events.

B. Phase II – Impoundment and Channel Reclamation Plan

Upon approval of the Notice of Intent to Abandon the impoundment, the operator will submit three copies of a detailed reclamation plan with BLM Form 3160-5 (Sundry Notice). The reclamation plan must address the requirements outlined in the BLM Wyoming Reclamation Policy (BLM IM WY201-032) and include the following:

1. An estimated schedule for the initiation and completion of various reclamation operations with consideration of seasonal constraints such as winter excavation/compaction and wildlife timing stipulations.
2. Channel slope between the upstream and downstream boundary of the reclamation site, the channel reach 300 feet upstream of the site and the channel reach 300 feet downstream of the site.
3. Maximum depth of the reservoir bottom below the original channel grade (or slope between upstream and downstream site boundaries).
4. The following information must be prepared under the direction of a licensed Professional Engineer:
 - a. Design drawings with original topography and proposed final grade. Proposed placement of major erosion control measures should be identified on the design drawing and discussed in the plan. Earthwork in perimeter areas should blend with surrounding hill slopes to provide natural appearance. Include earth balance calculations and a description of the fate of embankment materials and other fill.
 - b. Proposal to re-establish a stable stream channel through the site. Restored channel geometry should provide stable hydraulic transitions to upstream and downstream natural drainage.
 - i. Flatter gradient channels or those with smaller upstream drainage areas will need temporary channel erosion control measures until vegetation becomes established.
 - ii. Steeper gradient channels or those with larger upstream drainage areas may require permanent channel stabilization measures.

- iii. Embankments located directly above headcut features will need special channel stabilization design consideration to prevent headcuts from migrating upstream into disturbed soils at the site.
- 5. Depending on the results of the chemical evaluation in Phase I, the operator may be required to provide a description of the investigation method used to determine if impacted soil material is present in the impoundment, and if present, describe the volume of this material, chemical constituent of concern and proposed mitigation.
- 6. Description of the removal, reclamation and disposal of impoundment outlet, water discharge point (outfall), and seepage collection structure materials.
- 7. Proposal to mitigate any channel impacts related to chronic reservoir seepage or leakage.
- 8. Proposed revegetation detail to include the native seed mix with forb and shrub components based on the pre-disturbance ecological site and including seeding detail and application rates, or refer to the original POD Conditions of Approval.
- 9. Operator should include certification stating that all materials to be remediated are RCRA exempt and have not been contaminated with non-exempt RCRA listed, or characteristic wastes, or CERCLA hazardous substances.
- 10. A Reclamation Monitoring Schedule that specifies the time line and procedures to document reclamation progress and success, vegetation establishment, invasive species control and identification of site maintenance needs.

C. Phase III – Final Abandonment

The proponent shall continue to conduct routine monitoring following reclamation activities in compliance with the approved reclamation monitoring plan. This monitoring shall continue until the reclamation liability and bond are released. Monitoring reports will be sent to BLM authorized officer annually by March 31.

After two (2) complete growing seasons **and** successful establishment of native perennial vegetation, submit 3 copies of Form 3160-5 Sundry Notice as a Final Abandonment Notice for Reclamation including the following:

- 1. A detailed description of reclamation success. Provide photo documentation of reclamation activities along with as-built reclamation design drawing.
- 2. A surface owner release letter on split-estate must be submitted prior to a final abandonment evaluation by BLM.

BLM will evaluate the reclaimed site to determine the effectiveness of efforts in meeting the reclamation goals of the surface owner and surface management agency.

Bond release will follow successful reclamation and final abandonment of the impoundment area.

- a. If there is more than one impoundment per bond, a Bond Release Rider for the specific impoundment(s) will be required, a reverse of the bond requisition process. This will require the legal location, name of reservoir, etc.
- b. If there is a bond for each impoundment, then a letter requesting to terminate the period of liability on the bond will be submitted by the operator to the BLM Wyoming State Office.
- c. For impoundments bonded under the BLM Realty program (Right-of-Way), a written request from the grant holder (operator) will be submitted to request release of bond for the specific impoundment.